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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,589	03/23/2006	Eric Fassiau	05129-00117-US	1783

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EXAMINER	
TISCHLER, FRANCES	

ART UNIT	PAPER NUMBER
1796	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/564,589	FASSIAU ET AL.	
	Examiner	Art Unit	
	FRANCES TISCHLER	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-22,25 and 26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-22,25 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/16/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The objections and double patenting rejection not addressed below are deemed withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11 – 22, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vandenhende et al (US 2003/0119925).

The rejection stands as per reasons of record as stated in the previous office action of 7/1/08.

Regarding claim 11: Applicant claims a process for recovering a polymer in solution in a solvent by precipitating it with a non-solvent, wherein the precipitating medium comprises two dispersants: dispersant (I) has a greater affinity for the non-solvent and dispersant (II) has a greater affinity for the solvent. Vandenhende discloses (abstract, [0025], claims 1 and 2) the process of recycling a plastic dissolved in a solvent and precipitated out with a non-solvent in the presence of a dispersant.

Vandenhende teaches one dispersant but fails to teach two dispersants. However, Vandenhende discloses ([0025]) the use of various dispersing agents, including polyvinyl alcohol, bentonite, gelatin, esters or ethers of cellulose, water-soluble (co)polymers, etc. It is prima facie obvious to use a combination of dispersants with reasonable expectations of cumulative results since the various dispersants disclosed by Vandenhende are used for the same purpose of forming particles of small diameter during the recovery of the polymer. And it would have been obvious to one of ordinary skill in the art in the instant case to have used any two dispersants in combination such

that one has a greater affinity to the solvent and the other has a greater affinity to the non-solvent.

Applicant claims dispersant **(I)** with a higher degree of hydrolysis (65 – 90%) than dispersant (II) (less than or equal to 60%). Vandenhende fails to teach the degree of hydrolysis in the polyvinyl alcohol. However, polyvinyl alcohol contains a wide distribution of segments that encompass various degrees of hydrolysis, i.e., some areas may contain more acetate groups and some may contain more hydroxyl groups. Components with more hydroxyl groups will inherently have a greater affinity to the non-solvent and the components with less hydroxyl groups will have an inherently greater affinity to the solvent. Thus, the dispersant used by Vandenhende corresponds to the two dispersants used by applicant since both function in the same manner of having a greater affinity to the solvent or to the non-solvent. Furthermore, some sections will contain a degree of hydrolysis in the range of higher and of lower than the 65% and 60% as claimed by applicant. It would have been obvious to one of ordinary skill in the art to have assumed that any sample of hydrolyzed polyvinyl alcohol will contain various degrees of hydrolysis and that it can be used as both a hydrophilic agent and as a hydrophobic agent. Additionally, one of ordinary skill in the art would have known to choose polyvinyl alcohols with more or less hydroxyl groups depending on the intended use while working with the solvent or with the non-solvent, such as obtaining small diameter particles, as disclosed by Vandenhende.

Claim 12 claims PVC, corresponding to Vandenhende's disclosure of PVC ([0014], claim 10).

Claim 13 claims the non-solvent is added gradually which causes a phase separation and then a phase inversion, the amount of which is initially less than required for phase inversion and is subsequently introduced at least partially in vapor form. Similarly, Vandenhende discloses ([0026], claim 3) the gradual addition of the non-solvent; the phase inversion is generally observed, that is to say the precipitation medium changes from a dispersion of the non-solvent to a dispersion of the solvent in the non-solvent. Vandenhende fails to teach Q and Q' quantities. Referring to the Q and Q', Vandenhende's disclosure ([0026]) of the gradual addition of non-solvent means that at a point in time the non-solvent will hit a Q' value and at another point in time it will hit the Q value. Vandenhende also discloses ([0024], [0041]) injecting the non-solvent in both liquid and gaseous form for a faster precipitation of the plastic and injection of steam to permit for easier solvent removal. It is prima facie obvious to introduce the vapor at some point in time during the gradual introduction of the non-solvent that may hit the desired point claimed by applicant. It is noted that Q and Q' depend on the nature of solvent, non-solvent and polymer to be precipitated. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to achieve the claimed Q' and Q values through routine optimization and thereby obtaining the invention.

Claims 14 - 18 claim that dispersant **(I)** is added before phase inversion and dispersant (II) is added after phase inversion. Applicant also claims adding all of dispersant (I) and a minority weight fraction of dispersant **(II)** before the non-solvent is added and adding the remainder of dispersant **(II)** after phase inversion. Vandenhende

discloses ([0025]) adding the dispersing agent to decrease the size of the particles and the dispersing agent can be added from the beginning of the dissolution of the plastic or, alternatively, the dispersing agent may be added at the same time as the non-solvent, corresponding to applicant's claim of adding the dispersant before or after phase inversion. It would have been obvious to one of ordinary skill in the art to have optimized the variables of adding the dispersants at certain times and of certain amounts depending on desired results, such as the degree of precipitation, costs of chemicals, physical appearance of the precipitate, size of particles, etc.

Claims 19 and 20 claim water as the non-solvent and dispersants selected from cellulose ether and polyvinyl alcohol. Similarly, Vandenhende discloses ([0025, [0032], claims 5 and 10) water as the non-solvent and, among others, cellulose ether and polyvinyl alcohol as the dispersant.

Claims 21 and 22 claim the dispersant to be polyvinyl alcohols having different degrees of hydrolysis, where dispersant (I) has a higher degree of hydrolysis than dispersant (II). Similarly, Vandenhende's dispersant comprises polyvinyl alcohol ([0025]). The degree of hydrolysis has been discussed above regarding claim 11.

Claim 25 claims a process for recycling an article based on at least one polymer which comprises optionally shredding the article into fragments with an average size of 1 to 50 cm, contacting the article fragments with a solvent able to dissolve the polymer and recovering the polymer using the process of claim 11. Similarly, Vandenhende discloses (abstract, [005[- [007], [0025], claims 1, 2 and 12) a process of recycling a plastic where an article is shredded into fragments having an average dimension of 1 – 50 cm, contacting the fragments with a solvent capable of dissolving the polymer and recovering the polymer from solution as disclosed above.

Regarding claim 26: Applicant claims a process for recovering a polymer in solution in a solvent by precipitating it with a non-solvent, wherein the precipitating medium comprises two dispersants: dispersant (I) has a greater affinity for the non-solvent and dispersant (II) has a greater affinity for the solvent. Vandenhende discloses (abstract, [0025], claims 1 and 2) the process of recycling a plastic dissolved in a solvent and precipitated out with a non-solvent in the presence of a dispersant.

Vandenhende teaches one dispersant but fails to teach two dispersants. However, Vandenhende discloses ([0025]) the use of various dispersing agents, including polyvinyl alcohol, bentonite, gelatin, esters or ethers of cellulose, water-soluble (co)polymers, etc. It is prima facie obvious to use a combination of dispersants with reasonable expectations of cumulative results since the various dispersants disclosed by Vandenhende are used for the same purpose of forming particles of small diameter during the recovery of the polymer. And it would have been obvious to one of ordinary skill in the art in the instant case to have used any two dispersants in combination such that one has a greater affinity to the solvent and the other has a greater affinity to the non-solvent.

Applicant claims the non-solvent is added gradually which causes a phase separation and then a phase inversion, the amount of which is initially less than required for phase inversion and is subsequently introduced at least partially in vapor form. Similarly, Vandenhende discloses ([0026], claim 3) the gradual addition of the non-

solvent; the phase inversion is generally observed, that is to say the precipitation medium changes from a dispersion of the non-solvent to a dispersion of the solvent in the non-solvent. Vandenhende fails to teach Q and Q' quantities. Referring to the Q and Q', Vandenhende's disclosure ([0026]) of the gradual addition of non-solvent means that at a point in time the non-solvent will hit a Q' value and at another point in time it will hit the Q value. Vandenhende also discloses ([0024], [0041]) injecting the non-solvent in both liquid and gaseous form for a faster precipitation of the plastic and injection of steam to permit for easier solvent removal. It is prima facie obvious to introduce the vapor at some point in time during the gradual introduction of the non-solvent that may hit the desired point claimed by applicant. It is noted that Q and Q' depend on the nature of solvent, non-solvent and polymer to be precipitated. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to achieve the claimed Q' and Q values through routine optimization and thereby obtaining the invention.

Applicant claims that dispersant (I) is added before phase inversion and dispersant (II) is added after phase inversion. Vandenhende discloses ([0025]) adding the dispersing agent to decrease the size of the particles and the dispersing agent can be added from the beginning of the dissolution of the plastic or, alternatively, the dispersing agent may be added at the same time as the non-solvent, corresponding to applicant's claim of adding the dispersant before or after phase inversion. It would have been obvious to one of ordinary skill in the art to have optimized the variables of adding the dispersants at certain times and of certain amounts depending on desired results, such as the degree of precipitation, costs of chemicals, physical appearance of the precipitate, size of particles, etc.

Claims 11 and 26 are further rejected under 35 U.S.C. 103(a) as being unpatentable over Vandenhende et al (US 2003/0119925) in view of Rosano (US 4,146,499).

The disclosure of Vandenhende is adequately set forth in the paragraphs above and is incorporated herein by reference.

Vandenhende's use of one or more dispersants is discussed above. Alternatively, the use of dispersants is discussed in view of Rosano:

Rosano discloses (abstract) the use of two surfactants in the preparation of oil-in-water microemulsions where the first surfactant is dissolved in the oil, both then added to the water phase and, subsequently, the second surfactant (which is more soluble in water than the first) is then added. Rosano discloses that this process of using two surfactants in a hydrophobic/hydrophilic moiety is advantageous in chemical reactions involving hydrophobic substances such as polymers (column 5, lines 28 - 40). This process has the advantage of providing a convenient means of preparing microdispersions of such substances in water to facilitate chemical reactions and other such uses of such substances.

In light of such benefit, it would have been obvious to one of ordinary skill in the art to utilize a combination of surfactants as taught by Rosano in the disclosure of Vandenhende.

Response to Arguments

Applicant's arguments filed 9/29/08 have been fully considered but they are not persuasive.

Applicant submits that the cited case law does not teach that one can combine two components. Examiner respectfully disagrees. The cited case law stands exactly for the proposition that if the reference teaches various equivalents then it is *prima facie* obvious to combine two components each of which is taught by the prior art to be useful for the same purpose. In the instant case, Vandenhende discloses various useful dispersing agent such as bentonite, polyvinyl alcohol, gelatin, esters or ethers of cellulose, water-soluble (co)polymers, etc. It is prima facie obvious to use a combination of dispersants with reasonable expectations of cumulative results since the various dispersants disclosed by Vandenhende are used for the same purpose of forming particles of small diameter during the recovery of the polymer. Additionally, as stated in the previous office action, Rosano teaches that the use of two dispersants, where one is more soluble in polar solvents and the other is more soluble in nonpolar solvents, is advantageous over the use of only one dispersant, specifically with polymers. Therefore, it would have been obvious to have used Rosano's two dispersants in Vandenhende's solution since both disclose polymers with dispersants in polar and nonpolar moieties.

Applicants arguments regarding allegedly unexpected results, shown in comparative example R3 and example 9 are not persuasive either. Even if, arguendo, the results are unexpected, the showing of unexpected results is not commensurate in scope of the claims for at least the following reasons:

(1) Claims 11 and 26 read on any amount of dispersant I and dispersant II, which comprises a broad range from .0001 to 99.999%, while the showing is only for 0.3% polyvinyl alcohol with a higher DH and 0.02% and 0.05% polyvinyl alcohol with a lower DH

(2) Claims 11 and 26 read on any polymer in solution, while the showing is only for PVC

(3) Claims 11 and 26 read on any dispersant, while the showing is only for polyvinyl alcohol in a degree of hydrolysis of 71% and of 40%.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRANCES TISCHLER whose telephone number is (571)270-5458. The examiner can normally be reached on Monday-Friday 7:30AM - 5:00 PM; off every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jim Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Irina S. Zemel/
Primary Examiner, Art Unit 1796

Frances Tischler
Examiner
Art Unit 1796

/FT/